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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,075	02/18/2005	Christoph Leinemann	03100230AA	5051

30743 7590 10/04/2006

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EXAMINER

NDUBIZU, CHUKA CLEMENT

ART UNIT	PAPER NUMBER
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3749

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/525,075

Applicant(s)

LEINEMANN ET AL.

Examiner

Chuka C. Ndubizu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on through 12/30/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 021805.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☒ Other: Appendix.

DETAILED ACTION***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims 1-9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraemer et al 6,179,608 in view of Roussakis et al 4,909,730. Kraemer teaches the invention as claimed (see Figures 1-9), a flashback arrestor comprising: a flame barrier 20 (fig. 3) with a large number of defined passage gaps 21, whose gap cross section is set with regard to the properties of the flowing gas (column 3 line 46-51); wherein the second gaps with a smaller gap cross section are arranged adjacent to the first gaps having the selected gap cross section (column 3 line 45,46 states that cross-sectional area of gaps may vary); wherein the flame barrier is disk-like (10 in Fig. 1); wherein the gaps are arranged on turns formed in the shape of rings or spirals (column 3 line 41, 42;

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wherein the disk-like flame barrier 20 is formed by a corrugated metal strip 76 wound spirally together with a smooth metal strip 75 and the first corrugated metal strip having larger corrugations forming the turns having the first gaps and the corrugated metal strip having smaller corrugations forming the turns having the second gaps (column 3 line 45,46); wherein the turns have the gaps 21 over their length (see Fig. 1 also column 6 line 45, 46); wherein the disk-like flame barrier 20 is formed by a corrugated metal strip 76 wound spirally together with a smooth metal strip 75; and wherein the corrugation of the corrugated metal strip alternately has shorter or longer lengths of the corrugations in order to form the first and second gaps (column 3 line 45, 46); wherein the second gaps are formed with at least two different gap cross sections (column 3 line 45, 46, the hydraulic diameter may be any value less than the quenching diameter).

However, Kraemer does not teach a flame arrestor comprising a first spiral turn containing the first gap which is larger than the second gap contained in the second spiral turn; and wherein the two turns are provided such that a first number of first gaps and a second number of second gaps are arranged alternately one after another.

Roussakis discloses (see Figures 10 and 12 and enclosed Appendix) a flame arrestor comprising a stack 30 of sheets of expanded metal 31 forming a multiplicity of diamond-shaped first gaps (channels) 32. The sheets are arranged as shown in Fig. 12 such that next to the large first gaps 32 are smaller second gaps 320 (see Appendix) and the stacks are arranged such that one of first gap and one of second gap are arranged alternately one after another.

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It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kraemer's flame arrestor by making the gaps in the spiral turns of two different dimensions and arranging them alternatively in order to provide a flame arrestor which can also function as a flame holder as taught by Kraemer (column 1 line 15).

2. Claims 10-12, 14, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraemer in view of Roussakis and further in view of Leinemann 6,342,082. Kraemer in view of Roussakis teaches the invention as claimed and as discussed above.

However, Kraemer in view of Roussakis does not teach a flame arrestor wherein the ratio of the number of second gaps to the number of first gaps varies over the area of the flame barrier and the ratio of the number of second gaps to the number of first gaps decreases from inside to outside; wherein the second gaps all have the same gap cross sections; wherein the first and second gaps are formed with the same gap lengths; wherein the cross-sectional area of the second gaps amounts to at most 50% of the cross-sectional area of the first gaps.

Leinemann teaches in a detonation arrestor (see Figures 5 and 6), the arrestor comprising two sizes of passage gaps, the second gaps 9' in the center (with smaller cross-section) and the first gaps (with larger cross-section) in the periphery (column 5 line 50); wherein the ratio of the number of second gaps to the number of first gaps varies over the area of the flame barrier 5, decreasing

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from the inside (center) outwards; wherein the second gaps all have the same gap cross sections (see Fig 5); wherein the first and second gaps are formed with the same gap lengths (see Figs 5 and 6); wherein the cross-sectional area of the second gaps amounts to at most 50% of the cross-sectional area of the first gaps (see figs 5 and 6).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kraemer in view of Roussakis's flame arrestor by including all the limitations taught by Leinemann and recited above in order to provide a flame arrestor which does not have a large pressure drop and is inexpensive as taught by Leinemann (column 2 line 35,36,38,39).

Conclusion

The prior art made of record in the attached USPTO 892 and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuka C. Ndubizu whose telephone number is 571-272-6531. The examiner can normally be reached on Monday - Friday 8.30 - 4.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg can be reached on 571-272-4828. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



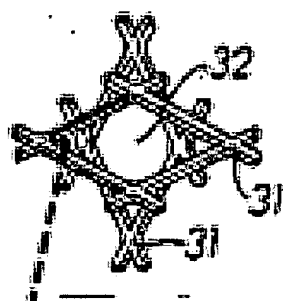
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Appendix For 10/525,075